Electronic Version

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# Claims

[c1] What is claimed is:

1.A nonlinear overlap method for time scaling to synthesize an $S_3[n]$ signal from an $S_1[n]$ signal and an $S_2[n]$ signal, the $S_1[n]$ signal having $N_1$ elements and the $S_2[n]$ signal having $N_2$ elements, the method comprising:

(a)delaying the $S_2[n]$ signal by a predetermined number of elements and forming an $S_5[n]$ signal;

(b)establishing a cross-correlogram of a cross-correlation function of the $S_1[n]$ signal and the $S_5[n]$ signal, the cross-correlogram including a plurality of magnitudes, each of the magnitudes corresponding to an index; and

(c)setting the $S_3[n]$ signal as values of the elements of:

$S_1[n]$, where 0 <= n < (the predetermined number + a first threshold value + a maximum index), the maximum index corresponding a largest magnitude among all of the magnitudes of the cross-corrolegram;

$S_1[n]$ weighted and added to an $S_4[n]$ signal that lags the $S_5[n]$ signal by the maximum index, where (the predetermined number + the first threshold value + the maximum index) <= n < ($N_1$ a second threshold value); and

$S_4$[n – (the predetermined number + the maximum in-

dex)], where ($N_1$ – the second threshold value) <= n <= ($N_2$ + the predetermined number + the maximum index); wherein the first and second threshold values are not equal to zero at the same time.

[c2] 2.The method of claim 1 wherein the $S_3[n]$ signal is equal to ($N_1$ – the second threshold value – n)/($N_1$ – (the predetermined number + the maximum index + the first threshold value + the second threshold value)) * $S_1[n]$ + (n – (the predetermined number + the maximum index + the first threshold value))/($N_1$ – (the predetermined number + the maximum index + the first threshold value + the second threshold value)) * $S_4$[n – (the predetermined number + the maximum index)] while (the predetermined number + the maximum index + the first threshold value) <= n < ($N_1$ – the second threshold value).

[c3] 3.The method of claim 1 wherein the $S_3[n]$ signal is equal to ($N_1$ – n)/($N_1$ – (the predetermined number + the maximum index)) * $S_1[n]$ + (n – (the predetermined number + the maximum index)) / ($N_1$ – (the predetermined number + the maximum index)) * $S_4$[n – (the predetermined number + the maximum index)].

[c4] 4.The method of claim 1 wherein the $S_1[n]$ signal and the $S_2[n]$ signal are sampled from an $S_1(t)$ signal and an $S_2(t)$ signal respectively.

[c5] 5.The method of claim 4 wherein the $S_1(t)$ signal and the $S_2(t)$ signal are both derived from an original signal.

[c6] 6.The method of claim 5 wherein the original signal is an audio signal.

[c7] 7.The method of claim 5 wherein the original signal is a video signal.

[c8] 8.The method of claim 4 wherein the $S_1(t)$ signal and the $S_2(t)$ signal are identical.

[c9] 9.The method of claim 4 wherein the $S_1(t)$ signal and the $S_2(t)$ signal are different from each other.

[c10] 10.The method of claim 1 wherein the predetermined number is equal to $[N_1 / 3]$.

[c11] 11.A nonlinear overlap method for time scaling to synthesize an $S_3[n]$ signal from an $S_1[n]$ signal and an $S_2[n]$ signal, the $S_1[n]$ signal having $N_1$ elements and the $S_2[n]$ signal having $N_2$ elements, the method comprising:
(a)establishing a cross-correlogram of a cross-correlation function of the $S_1[n]$ signal and the $S_2[n]$ signal, the cross-correlogram including a plurality of magnitudes, each of the magnitudes corresponding to an index; and
(b)setting the $S_3[n]$ signal as values of the elements of:

$S_1[n]$, where $0 <= n <$ (a first threshold value + a maximum index), the maximum index corresponding a largest magnitude among all of the magnitudes of the cross-corrolegram;

$S_1[n]$ weighted and added to an $S_4[n]$ signal that lags the $S_2[n]$ signal by the maximum index, where (the first threshold value + the maximum index) $<= n <$ ($N_1$ - a second threshold value); and

$S_4$[n - the maximum index], where ($N_1$ - the second threshold value) $<= n <=$ ($N_2$ + the maximum index);

wherein the first and second threshold values are not equal to zero at the same time.

[c12] 12.The method of claim 11 wherein the $S_3[n]$ signal is equal to ($N_1$ - the second threshold value - n)/($N_1$ - (the maximum index + the first threshold value + the second threshold value)) * $S_1[n]$ + (n - (the maximum index + the first threshold vlaue))/($N_1$ - (the maximum index + the first threshold value + the second threshold value)) * $S_4$[n - (the maximum index)] while (the maximum index + the first threshold value) $<= n <$ ($N_1$ - the second threshold value).

[c13] 13.The method of claim 11 wherein the $S_3[n]$ signal is equal to ($N_1$ - n)/($N_1$ - the maximum index) * $S_1[n]$ + (n - the maximum index) / ($N_1$ - the maximum index) * $S_4$[n - the maximum index].

[c14] 14.The method of claim 11 wherein the $S_1[n]$ signal and the $S_2[n]$ signal are sampled from an $S_1(t)$ signal and an $S_2(t)$ signal respectively.

[c15] 15.The method of claim 14 wherein the $S_1(t)$ signal and the $S_2(t)$ signal are both derived from an original signal.

[c16] 16.The method of claim 15 wherein the original signal is an audio signal.

[c17] 17.The method of claim 15 wherein the original signal is a video signal.

[c18] 18.The method of claim 14 wherein the $S_1(t)$ signal and the $S_2(t)$ signal are identical.

[c19] 19.The method of claim 14 wherein the $S_1(t)$ signal and the $S_2(t)$ signal are different from each other.